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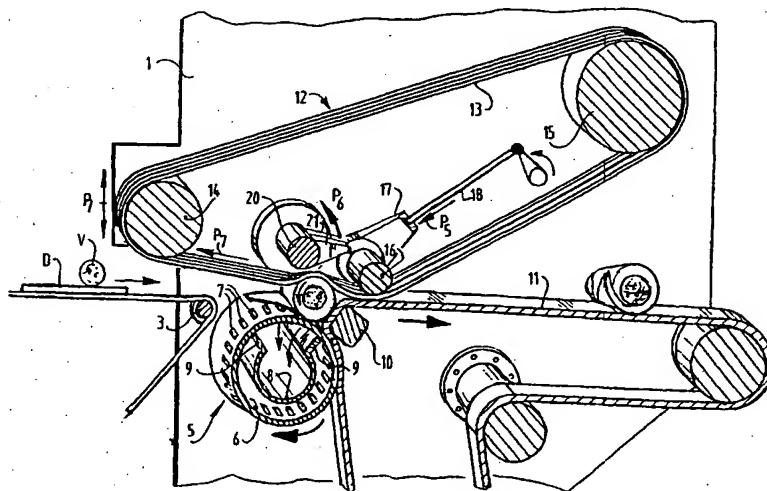
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(54) Title: A DEVICE FOR PRODUCING FILLED DOUGH PIECES SUCH AS A CROISSANT AND THE LIKE



(57) Abstract: A device for producing a filled dough piece, such as a croissant or the like, wherein the starting point is a dough sheet (D) to be folded or rolled up, which device comprises a frame (1) with rolling-up station (4) and a conveyor belt system (2, 3) arranged therein, on which the dough sheet (D) is carried to the rolling-up station (4) in the desired shape and position, wherein the rolling-up station (4) is provided with a drum (5) connecting onto the conveyor belt (2), pressing means (12) arranged above the drum (5) in the form of an endless element (13) of flexible material, and a reversing roller (10) of an outfeed conveyor (11), wherein a pressing roller (16) is arranged to close to this reversing roller (10) on the inside of the endless element (13) and can be carried by adjusting means (17, 18) controlled using synchronized signals from a position clear of the outfeed conveyor (11) to a position on

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

**A DEVICE FOR PRODUCING FILLED DOUGH PIECES
SUCH AS A CROISSANT AND THE LIKE**

The invention relates to a device for producing a filled dough piece, such as a croissant or the like, wherein the starting point is a dough sheet to be folded or rolled up, which device comprises a frame with
5 rolling-up station and a conveyor belt system arranged therein, on which the dough sheet is carried to the rolling-up station in the desired shape and position.

It is already known that for the industrial production of dough products, such as croissants, a
10 number of pre-formed sheets are laid on a conveyor belt, which sheets are brought into the desired shape, are then arranged in respect of position and then rolled up in order to form the semi-manufactured product prior to the final baking.

15 Such a device usually connects onto the kneading machine, and the device can connect to a packing machine.

The invention has for its object to improve such a device such that filled dough pieces can also be
20 produced. For this purpose a filling of for instance liquid material, jams and the like, have to be applied to a dough sheet which has not yet been rolled up. The subsequent rolling-up has the drawback that the filling can soil the machine. The invention has for its object
25 to embody the device such that this drawback is obviated.

The device according to the invention is distinguished in that the rolling-up station is provided with a drum connecting onto the conveyor belt, pressing
30 means arranged above the drum in the form of an endless element of flexible material, and a reversing roller of an outfeed conveyor, wherein a pressing roller is

arranged close to this reversing roller on the inside of the endless element and can be carried by adjusting means controlled using synchronized signals from a position clear of the outfeed conveyor to a position on the outfeed conveyor, and vice versa.

Owing to the co-action between the reversing roller on the end of the feed conveyor, the drum connecting thereto, the reversing roller of the outfeed conveyor and the flexible pressing means, which can be placed in an operating or rolling position respectively a free position, the filling will make the least possible contact with the machine components, whereby the soiling is reduced.

According to the invention the pressing means are preferably embodied as a system of flexible ropes running mutually parallel. The pressing roller thereby only requires lifting from the operating position to the free position and vice versa without extra means being necessary to have to pretension respectively re-tension the pressing means.

Above mentioned and other features will be further elucidated in the figure description of an embodiment following hereinbelow. In the drawing:

figure 1 shows a perspective standing view of the infeed side of the rolling-up station of the device according to the invention,

figure 2 shows a standing longitudinal section of the rolling-up station of figure 1, as seen in the direction of arrow II,

figure 3 shows a standing view of the outfeed side of the device according to the invention.

The numeral 1 in the figures designates the frame of the device, which shows only the frame of the rolling-up station. Supported in the other frame parts (which are not shown) is a conveyor belt system 2 which

consists of random belt parts of suitable material, which are supported round guide rollers, and in particular the reversing roller 3 on the outfeed side of conveyor belt 2.

- 5 This conveyor belt is driven in the direction of arrow P1, so that the upper part moves to the left in figure 1, in the direction of rolling-up station 4.

Rolling-up station 4 comprises a drum 5 which connects to the outfeed side of feed conveyor 2 and
10 which here consists of a rotatably driven cylindrical casing 6, which is perforated with a pattern of holes or slots 7. Inside the drum is arranged a stationary tube 8 which is provided along the end edges with baffles 9, which are placed radially in order to obtain a contact
15 space over an arcuate section of drum 7. Tube 8 is adjustable in the direction of arrow P3 in order to enable adjustment in the space of the arcuate section formed by baffles 9, which can be carried out with random means. The tube can be connected to a vacuum
20 source, which is not shown and thus schematically represented by arrow P4.

A reversing roller 10 of square cross-section of outfeed conveyor 11 is arranged on the side of the drum remote from reversing roller 3. The polygonal or square
25 cross-section is adjustable as according to arrow P8 in order to obtain the optimal shaping space.

Pressing means 12 are arranged on the upper side of drum 5. These pressing means are a system of endless ropes 13 which are trained round a front 14 and a rear
30 15 reversing roller. A pressing roller 16 is arranged on the inside of the space formed by ropes 13. This pressing roller is received in a guide system 17, which can be moved in the direction of arrow P5 such that pressing roller 16 can be pressed against the outfeed
35 conveyor part of outfeed conveyor 11 while carrying along the ropes 13. Roller 16 can be reset by means of a crank 18. A cyclical movement is thus possible, whereby

a rolling-up space can be created between the drum 5, the outfeed conveyor 11 at the position of reversing roller 10 and the ropes 13, in which space the dough piece can be rolled up. It is noted that roller 14 is
5 height-adjustable as according to arrow P7 to enable adjustment of the infeed space.

It is finally noted that a support shaft 20 with radially directed cams 21 is arranged rotatably according to arrow P6 in the space inside ropes 13, in
10 order to lift the formed dough piece from drum 5 to the beginning of the outfeed conveyor when roller 16 is released, so as to further enable undisturbed transport.

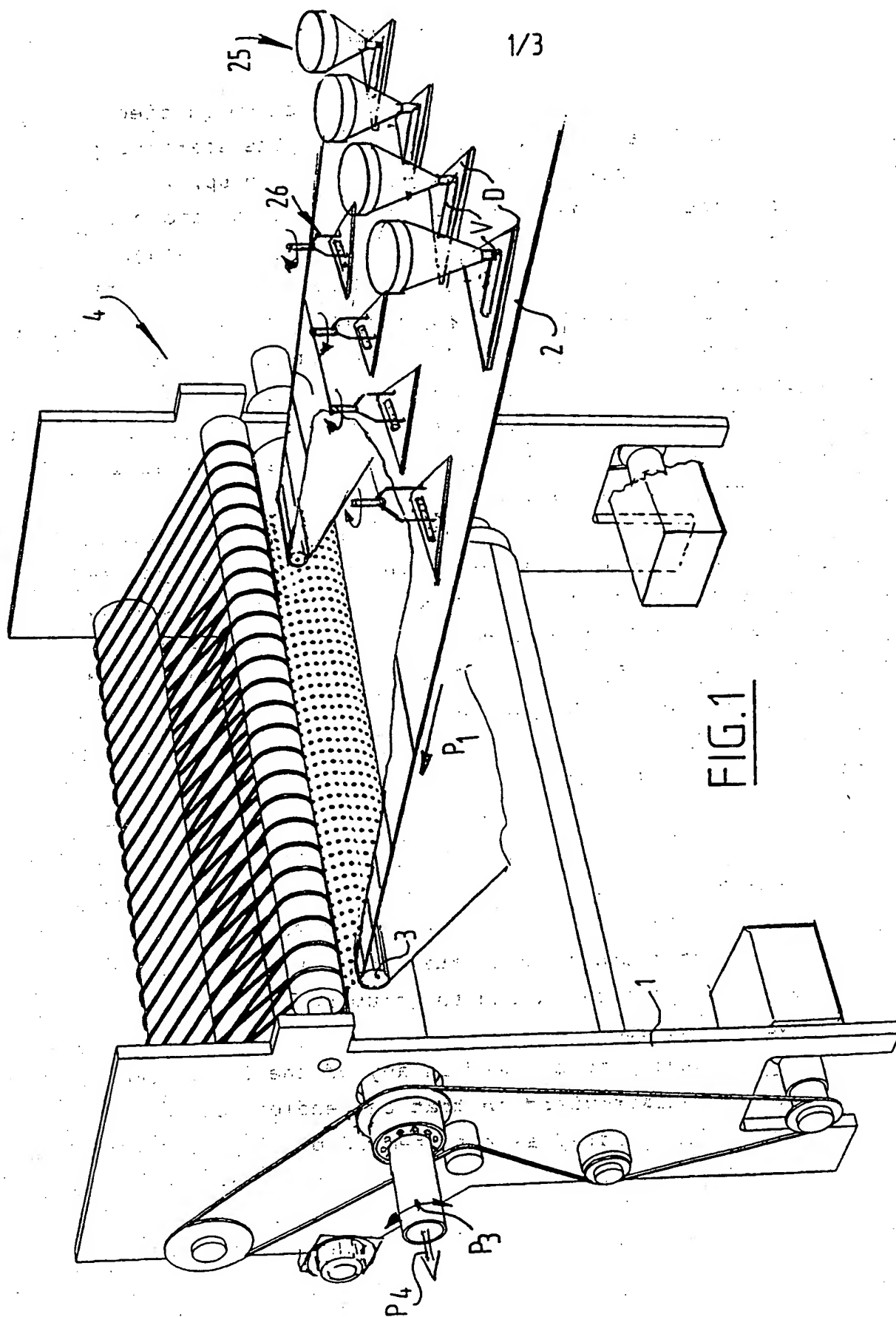
The rolling-up takes place by arranging in this case triangular dough pieces D on feed conveyor 2. A
15 filling station 25 of random form can be arranged above the carrying part of conveyor 2 such that a line of filling V is applied to each dough piece D. Because conveyor belt 2 is advanced in the direction of arrow P1, a controlled opening of funnel 25 has to be left
20 clear for only a short time in order to deposit a line. The dough piece is then rotated by rotating means 26, so that the filling comes to lie on the leading side of the dough pieces, which leading side is the first to be deposited over the edge of reversing roller 3 of the
25 feed conveyor onto drum 5. Pressing roller 16 is in the upper position, so that ropes 13 lie clear of the drum and maintain sufficient space not to contact the filling. The leading side is then engaged by the upward running front part of outfeed conveyor 11 and carried
30 upward, during which time roller 16 is meanwhile carried downward, whereby this leading edge is guided back in the direction of arrow P7 by the rotating ropes 13. A dough roll is thus created with the filling therein, which process continues until the whole dough piece has
35 been rolled up. Roller 16 is then released and returns to the free position, whereby ropes 13 slacken and are released from drum 5 and wall part 11. Cams 21 then

further ensure a discharge of the dough piece on outfeed conveyor 11.

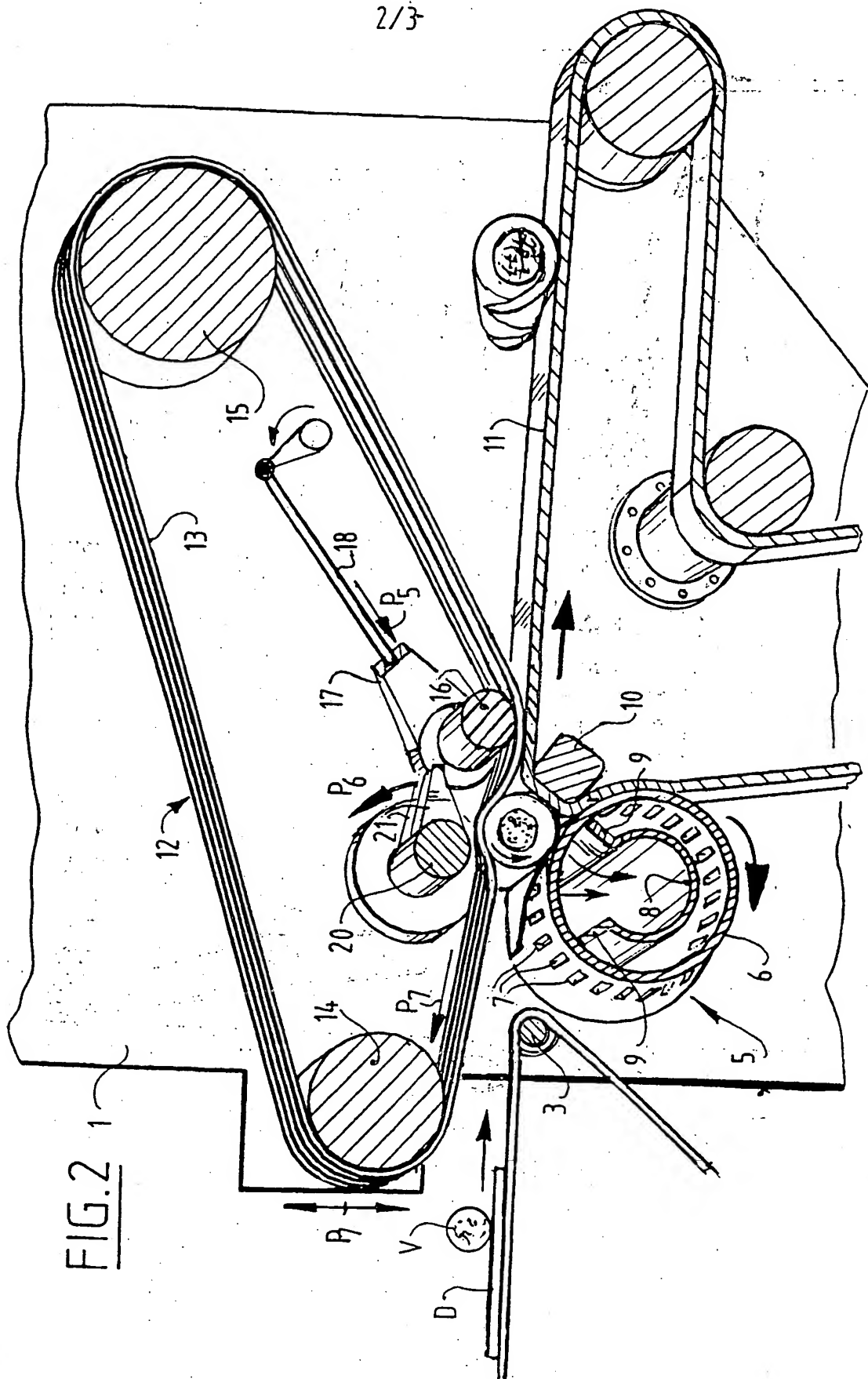
The invention is not limited to the above described embodiment.

CLAIMS

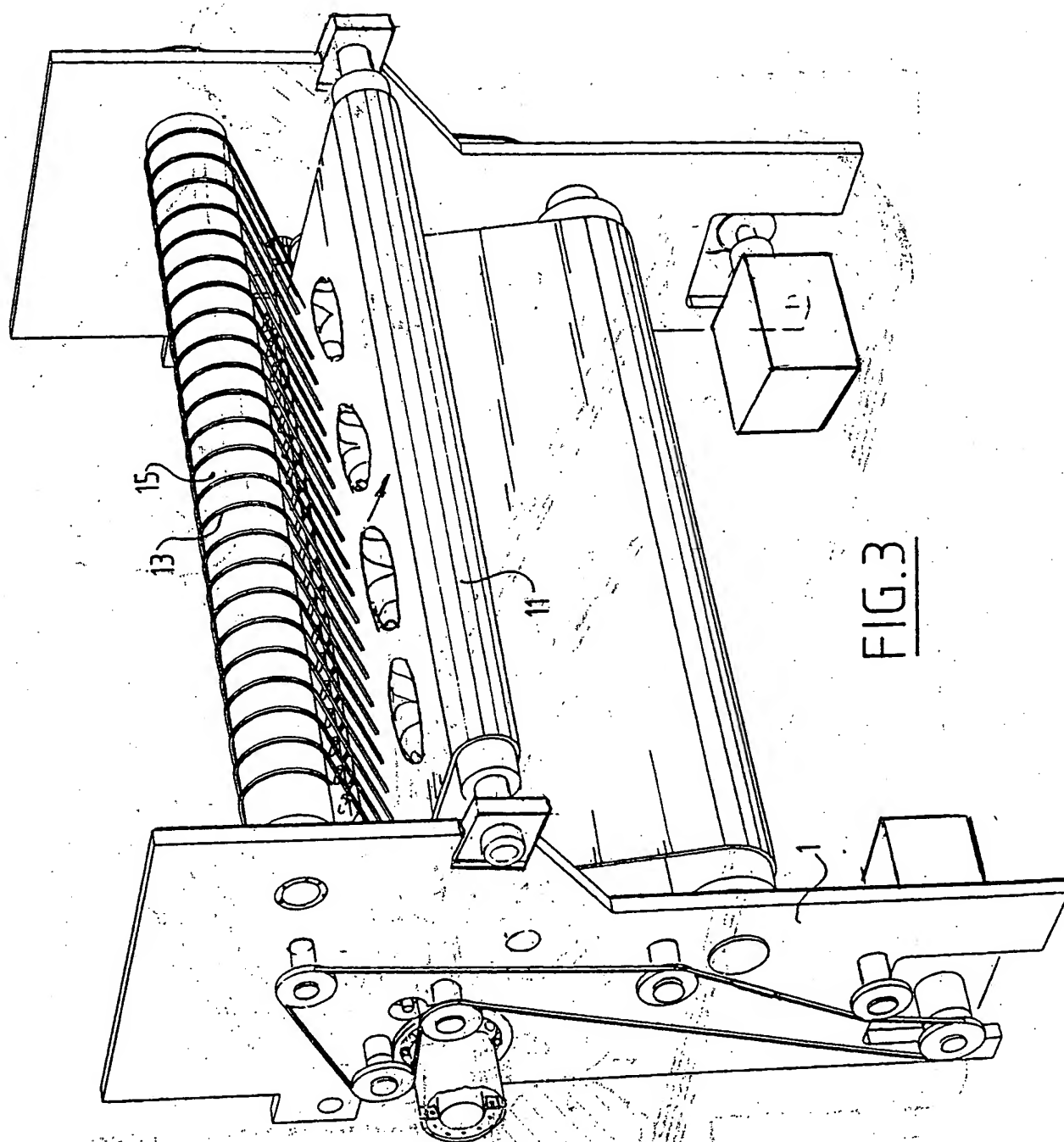
1. Device for producing a filled dough piece, such as a croissant or the like, wherein the starting point is a dough sheet to be folded or rolled up, which device comprises a frame with rolling-up station and a conveyor belt system arranged therein, on which the dough sheet is carried to the rolling-up station in the desired shape and position, **characterized in that** the rolling-up station is provided with a drum connecting onto the conveyor belt, pressing means arranged above the drum in the form of an endless element of flexible material, and a reversing roller of an outfeed conveyor, wherein a pressing roller is arranged close to this reversing roller on the inside of the endless element and can be carried by adjusting means controlled using synchronized signals from a position clear of the outfeed conveyor to a position on the outfeed conveyor, and vice versa.
2. Device as claimed in claim 1, **characterized in that** as seen in the transporting direction filling means are arranged above the feed conveyor just prior to the rolling-up station.
3. Device as claimed in claim 2, **characterized in that** rotation means are arranged between the filling means and the rolling-up station.
4. Device as claimed in any of the foregoing claims, **characterized in that** the drum cylindrical casing is perforated and the drum space is connected to a vacuum source.
5. Device as claimed in any of the foregoing claims, **characterized in that** the endless pressing element is embodied as a system of parallel ropes of elastic material.
6. Device as claimed in any of the foregoing claims, **characterized in that** the reversing roller of the outfeed conveyor has a polygonal, preferably rectangular cross-section.



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INTERNATIONAL SEARCH REPORT

International Application No

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A. CLASSIFICATION OF SUBJECT MATTER
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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A21C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 204 490 A (RHEON AUTOMATIC MACHINERY CO) 10 December 1986 (1986-12-10) the whole document	1,6
A	EP 0 327 856 A (CIM SRL) 16 August 1989 (1989-08-16) the whole document	1,2
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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- *8* document member of the same patent family

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NL - 2280 HV Rijswijk

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INTERNATIONAL SEARCH REPORT

International Application No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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